

N O T I C E

THIS DOCUMENT HAS BEEN REPRODUCED FROM
MICROFICHE. ALTHOUGH IT IS RECOGNIZED THAT
CERTAIN PORTIONS ARE ILLEGIBLE, IT IS BEING RELEASED
IN THE INTEREST OF MAKING AVAILABLE AS MUCH
INFORMATION AS POSSIBLE

Made available under NASA sponsorship
in the interest of earth resources and a dis-
semination of Earth Resources Survey
Program information without liability
for any use made thereof."

81-10050
CR-163740

(E81-10050) HCMM IMAGERY FOR THE
DISCRIMINATION OF ROCK TYPES, THE DETECTION
OF GEOTHERMAL ENERGY SOURCES AND THE
ASSESSMENT OF SOIL MOISTURE CONTENT IN
WESTERN QUEENSLAND AND ADJACENT PARTS OF NEW G3/43

N81-13409

Unclas

00050

HCMH Imagery for the Discrimination of Rock
Types, the Detection of Geothermal Energy
Sources and the Assessment of Soil Moisture
Content in western Queensland and adjacent
parts of New South Wales and South Australia

HCM-022

Issued by: Monica M. Cole
Bedford College (University of
London)
Regent's Park
London, NW1 4NS

Progress Report: 30 April 1980

RECEIVED

NOV 5 1980

SIS/902.6

HCM-022

TYPE II

HCMM imagery for the discrimination of rock types, the detection of geothermal energy sources and the assessment of soil moisture content in western Queensland and adjacent parts of New South Wales and South Australia.

HCN-022

By : Monica M. Cole

Introduction

Investigations of the HCMM imagery are focussed on the Mount Isa - Cloncurry area of northwest Queensland for which LANDSAT imagery has already been evaluated. The main purpose of the investigations in this area is the discrimination of rock type within the upland country underlain by Precambrian rocks and the plains underlain by Mesozoic and later sediments. Investigations of the HCMM imagery for the detection of geothermal energy sources is focussed on the Great Artesian Basin and those concerned with the discrimination of differences in soil moisture conditions is being undertaken within the drainage basins focussing on the Gulf of Carpentaria and on Lake Eyre.

Techniques

Only photographic prints and negative films of day-visible, day-IR and night-IR imagery has been received. For northwest Queensland only five day-visible and day-IR frames of acceptable quality have been received. A master-grid has been established over these frames within which selected grid sections are being enlarged photographically for the identification of stream courses and geological features permitting an interpretation of the imagery relative to ground truth information. The imagery is also being scanned and digitized using a Joyce-Loebl microdensitometer for classification purposes. When satisfactory night-IR cover is received it is proposed to construct thermal inertia models.

Accomplishments

Accomplishments have been constrained by delays over the supply of data products and by the poor quality of much of the imagery that has been received. Failure to provide the CCTs requested has seriously restricted work.

Significant results

Because data has not been received from NASA no significant results other than those cited in the report dated 28 February 1980 have been achieved.

Publications

A copy of the paper entitled ' HCMM and LANDSAT imagery for mineral exploration in northwest Queensland' presented at the Remote Sensing of the Environment Symposium organized by the University of Michigan and held in Costa Rica was sent to you. Currently it is in press.

Problems

The investigations are being seriously impeded by problems arising from delays over the provision of data products and by poor quality of many of the prints and film negatives received. These are elaborated under Data Quality and Delivery below.

Data Quality and Delivery

Serious problems have been encountered as a result of the continued long delays over the provision of imagery and the poor quality of the bulk of that received. The problems over the non-delivery of any CCTs was finally resolved when following a telephone call from the First Secretary (Technology) at the British Embassy in Washington to Mr. James Broderick,

NASA discovered that the problem arose in their system and that no CCTs had been sent to the Embassy for onward despatch. These tapes were finally received on 10 April but they contained incomplete data and two were damaged.

Recommendations

Because of the problems outlined under Data Quality and Delivery some modifications of effort became necessary. Thermal inertia data and CCTs became essential for further work on rock discrimination in northwest Queensland and Landsat imagery for evaluation of the drainage focussing on Lake Eyre for which good quality HCMM imagery is available. A field programme is proposed to obtain further ground truth of those areas.

Conclusions

For areas for which good quality HCMM imagery is available it provides most valuable new information, notably, on ephemeral and seasonal drainage systems. For studies of these the day-IR cover in particular provides most valuable information.